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Shunsuke Toyoda

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EXAMINER

VELASQUEZ, VANESSA T

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,717	Applicant(s) TOYODA ET AL.	
	Examiner Vanessa Velasquez	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-8 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>Oct. 1, 2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 1 and 6 are amended. Claims 11-16 are newly added. Claims 4, 5, 9, and 10 are canceled. Claims 1-3, 6-8, and 11-16 are presented for examination on the merits.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on October 1, 2008 was filed after the mailing date of the non-final Office action on July 9, 2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 112, First Paragraph

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 11-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically with regard to independent claims

Art Unit: 1793

11 and 14, the claims recite that the ferrite grain diameter is 1.1 microns to less than 10 microns. There is no support for the limitation "less than 10 microns," which Applicant's claim is a critical to the instant invention. Claims 12, 13, 15, and 16 are likewise rejected for being dependent on rejected claims 11 and 14.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (US 6,632,296 B2). The claims stand rejected on the same grounds set forth in the Office action dated July 9, 2008.

Regarding the amended portion of claims 1 and 6, Yoshinaga et al. are silent as to the fatigue endurance of the alloy taught therein after being quenched. However, it has been established that

"[w]hen the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent."

See MPEP § 2112.01, section I. In the instant case, Yoshinaga et al. teach an overlapping chemical composition, overlapping ferritic microstructure, and overlapping grain size, hence the "substantially identical" structure with the claimed invention. Therefore, any claimed properties, such as a fatigue endurance of 450 MPa or more after quenching, is expected to be inherent to the steel alloy of Yoshinaga et al.

Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (US 6,632,296 B2).

Regarding claims 11 and 14, Yoshinaga teaches a composition for a steel pipe that has excellent formability (abstract, first sentence). The pipe comprises the following elements, in percent by mass (col. 3, lines 1-9, 19-21, 26-44):

Element	Claims 11 and 14	Yoshinaga et al.
C	0.18 - 0.29	0.0001 - 0.50
Si	0.06 - 0.45	0.001 - 2.5
Mn	0.91 - 1.85	0.01 - 3.0
P	0 - 0.019	0.001 - 0.2
S	0 - 0.0029	0 - 0.05
Al	0.015 - 0.075	0.001 - 0.5
N	0 - 0.0049	0 - 0.01
O	0 - 0.0049	0 - 0.01
B	0.0001 - 0.0029	0.0001 - 0.01
Nb	0.001 - 0.019	0 - 0.15
Ti	0.001 - 0.029	0 - 0.2
Cr	0.001 - 0.195	0.001 - 2.5
Mo	0.001 - 0.195	0.001 - 2.5
Fe	balance	balance

The oxygen content is preferably no more than 0.01% because it decreases the formability of the steel (col. 7, lines 35-37). The steel is preferably at least 75 vol.% ferrite, as this ensures good formability (col. 12, lines 48-51). The overlap between the ranges taught by the prior art and recited in the claims is sufficient to establish a *prima facie* case of obviousness (MPEP § 2144.05 "Overlap of Ranges").

Still regarding claims 11 and 14, the fatigue endurance after quenching, low temperature toughness, and resistance to hydrogen embrittlement would be inherent to the steel taught by Yoshinaga because steel disclosed therein and in the claims overlap

Art Unit: 1793

in chemical composition, microstructure, and grain size. It is understood that "a chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present" (MPEP § 2112.01 "Composition Claims").

Still regarding claims 11 and 14, the claims recite limitations referring to a carbon equivalent and multiplying factors. It has been held that "there can be no patentability in the discovery of a general formula" if the claimed composition has been taught in the prior art (*In re Cooper and Foley*, 57 USPQ 117).

Still regarding claims 11 and 14, Yoshinaga et al. do not teach a ferrite grain size that is less than 10 microns as claimed. However, a *prima facie* case of obviousness may still be made "where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties" (MPEP § 2144.05, section I). In the instant case, Yoshinaga et al. teach that the ferrite grains are at least 10 microns (col. 12, lines 26-64). Note, however, that the claimed range of "less than 10 microns" encompasses values such as 9.99 microns, which appears to be very close to 10 microns of the prior art. One of ordinary skill in the art would expect a steel possessing overlapping chemical composition, microstructure, and a grain size of 10 microns, as taught in Yoshinaga et al., to have the same properties as the claimed steel that overlaps Yoshinaga et al. in composition, microstructure, and has a grain size of 9.99 microns, which is less than 10 microns as claimed.

Art Unit: 1793

Regarding claims 12 and 15, the steel alloy of Yoshinaga et al. may further comprise the following elements, in percent by mass (col. 3, lines 26-44):

Element	Claims 12 and 15	Yoshinaga et al.
Cu	0.001-0.175	0.001-2.5
Ni	0.001-0.145	0.001-2.5
V	0.001-0.029	0.0001-0.5

Regarding claims 13 and 16, the steel alloy of Yoshinaga et al. may further comprise the following element, in percent by mass (col. 3, lines 25-44):

Element	Claims 13 and 16	Yoshinaga et al.
Ca	0.001-0.029	0.0001-0.01

Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (JP 2002-266022, English abstract and machine translation).

Regarding claims 11 and 14, Hasegawa et al. teach a steel alloy possessing good low temperature toughness (abstract, para. [0001]). The steel comprises the following elements, in mass percent (abstract, para. [0008]-[0031]):

Element	Claims 11 and 14	Hasegawa et al.
C	0.18 - 0.29	0.01 - 0.2
Si	0.06 - 0.45	0.01 - 1
Mn	0.91 - 1.85	0.1 - 2
P	0 - 0.019	0 - 0.02
S	0 - 0.0029	0 - 0.01
Al	0.015 - 0.075	0.001 - 0.1
N	0 - 0.0049	0.001 - 0.01
O	0 - 0.0049	Not taught
B	0.0001 - 0.0029	0.0002 - 0.005
Nb	0.001 - 0.019	0.003 - 0.1
Ti	0.001 - 0.029	0.003 - 0.1
Cr	0.001 - 0.195	0.01 - 2
Mo	0.001 - 0.195	0.01 - 2
Fe	balance	balance

Art Unit: 1793

The overlap between the ranges taught in the prior art and recited in the claims is sufficient to establish a *prima facie* case of obviousness (MPEP § 2144.05). With regard to the oxygen content, Hasegawa et al. do not teach that oxygen is present. Therefore, it will be regarded as absent (i.e., 0 mass %) from the steel alloy.

Still regarding claims 11 and 14, ferrite comprises at least 50% of the microstructure (para. [0036]). (This number was obtained by subtracting the amount of secondary phase (maximum of 50%) from 100% to obtain the amount of primary phase ferrite.) The grain size of the ferrite is 1-3 microns (abstract, para. [0034]), which overlaps the claimed range.

Still regarding claims 11 and 14, the excellent formability, fatigue endurance after quenching, and resistance to hydrogen embrittlement would be inherent to the steel of Hasegawa et al. because the steel disclosed therein and in the claims overlap in chemical composition, microstructure, and grain size. It is understood that "a chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present" (MPEP § 2112.01 "Composition Claims"). With regard to "for structural parts of automobiles," this limitation is intended use of the steel and will not be accorded patentable weight in the claims.

Still regarding claims 11 and 14, the claims recite limitations referring to a carbon equivalent and multiplying factors. It has been held that "there can be no patentability in the discovery of a general formula" if the claimed composition has been taught in the prior art (*In re Cooper and Foley*, 57 USPQ 117).

Art Unit: 1793

Regarding claims 12 and 15, Hasegawa et al. teach that the steel may further comprise the following elements (abstract, para. [0018], [0023], [0024]):

Element	Claims 12 and 15	Hasegawa et al.
Cu	0.001-0.175	0.1 - 1.5
Ni	0.001-0.145	0.1 - 5
V	0.001-0.029	0.005 - 0.5

Regarding claims 13 and 16, Hasegawa et al. teach that the steel may further comprise the following element (abstract, para. [0031]):

Element	Claims 13 and 16	Hasegawa et al.
Ca	0.001-0.029	0.0005 - 0.01

Response to Arguments

Applicant's arguments filed October 1, 2008 have been fully considered but they are not persuasive.

First, Applicant argues that in addition to the chemical composition, the method of manufacture of the steel plays an important role in inducing particular characteristics of the steel of the instant invention. In response to Applicant's argument, it is noted that the features upon which Applicant relies (i.e., method of making the steel) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Second, Applicant argues that steels having grain sizes of more than 10 microns have fatigue endurances of less than 450 MPa. In response, Applicant has not

Art Unit: 1793

demonstrated criticality of the 10 micron boundary. Applicant states that Steels E, I, X, and Z, which have ferrite grain diameters of 15.6, 13.4, 12.9, and 13.2 microns, respectively, prove that steels with grain sizes above 10 microns have decreased fatigue endurance. In response, the data provided is not commensurate in scope with the claims. Steel X, for instance, has a grain size that is 2.9 microns larger than the claimed 10 microns. Thus, from the data alone, it is unclear to one of ordinary skill that 10 microns is a critical grain size, as criticality could be 10.5, 11.1, 12.8 microns, etc.

Third, Applicant asserts that the Examiner's "inherency" position is untenable. Applicant is reminded that once the Examiner has presented a case for inherency, the burden is on Applicant to show an unobvious difference. Applicant has not provided objective data commensurate in scope with the claimed invention to show an unobvious difference. See the immediately preceding paragraph.

Fourth, Applicant argues that the Yoshinaga reference does not teach a ferritic grain size of less than 10 microns. However, a *prima facie* case of obviousness may still be made "where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties" (MPEP § 2144.05, section I). In the instant case, Yoshinaga et al. teach that the ferrite grains are at least 10 microns (col. 12, lines 26-64). Note, however, that the claimed range of "less than 10 microns" encompasses values such as 9.99 microns, which appears to be very close to 10 microns of the prior art. One of ordinary skill in the art would expect a steel possessing overlapping chemical composition, microstructure, and a grain size of 10 microns, as taught in Yoshinaga et al., to have the same

Art Unit: 1793

properties as the claimed steel that overlaps Yoshinaga et al. in composition, microstructure, and has a grain size of 9.99 microns, which is less than 10 microns as claimed. An alternative rejection relying on Hasegawa et al. is also put forth teaching an overlapping chemical composition, microstructure, AND grain size.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Velasquez whose telephone number is 571-270-3587. The examiner can normally be reached on Monday-Friday 9:00 AM-6:00 PM ET.

Art Unit: 1793

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

/Vanessa Velasquez/
Examiner, Art Unit 1793